

## ABSTRACT

The present invention provides a method of producing a CuZnAlZr oxide catalyst consisting of reacting an aqueous NaOH solution and aqueous  $\text{NaCO}_3$  solution with a mixture of aqueous solutions of each nitrate of Cu, Zn, Al, and Zr, producing a precipitate by coprecipitation, aging, filtering, washing and drying this precipitate to prepare a catalyst precursor consisting of a CuZnAlZr layered double hydroxide, and then obtaining a CuZnAlZr oxide by calcining this precursor in an air ambient atmosphere, a CuZnAlZr oxide catalyst, a CuZnZrCe oxide catalyst, a CoCuZnAl oxide catalyst for producing hydrogen by oxidative steam reforming of methanol, and methods of producing hydrogen gas consisting of converting methanol to hydrogen gas by oxidative steam reforming in the presence of air and steam using these oxide catalysts.